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ROSEN AVIATION

10.6" HD Widescreen Bulkhead Display

Technical Manual

Model 1060-001

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Rev D

Technical Manual, 10.6” HD Widescreen Bulkhead Display

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1. INTRODUCTION

Rosen’s 10.6” bulkhead display (model 1060-001) brings stunning HD widescreen picture quality into a small aircraft’s cabin interior.

Although you can use this display in standard analog systems, via Composite and/or VGA video inputs, the 3G HD-SDI input allows you to use it in high definition systems and connect directly to a Rosen Blu-ray player.

This manual describes how to install these all-in-one displays onto your aircraft. It contains everything you need to know to wire the display and confirm that it is functioning correctly.

Note: Only trained and qualified personnel should perform installation and service.

The *Outline & Installation* drawing and the Technical Manual are available on the Rosen Aviation website at www.rosenaviation.com.

From the Rosen Aviation home page, select the **Products** tab and browse by product category. Please contact Technical Support at 541.342.3802 if you cannot find the documentation that you need.

1.1. System Overview

The 1060-001 high-definition display enables viewers to watch digital video signals as well as analog video signals in both high definition and standard resolutions.

Composite and SDI are the default video signals in Auto Detect mode. The Auto Detect mode continually searches between Composite and SDI for a valid signal and then switches to that input. In this mode, you remain connected to either input without having to set the source. If both Composite and SDI are connected and active, then Composite is displayed by default.

Composite, SDI, Component, and RGB are all available in Standard Operation mode. RGB-1 and Component-1 share the VGA connector. Although there are four signal choices, you can only select from three at any given time.

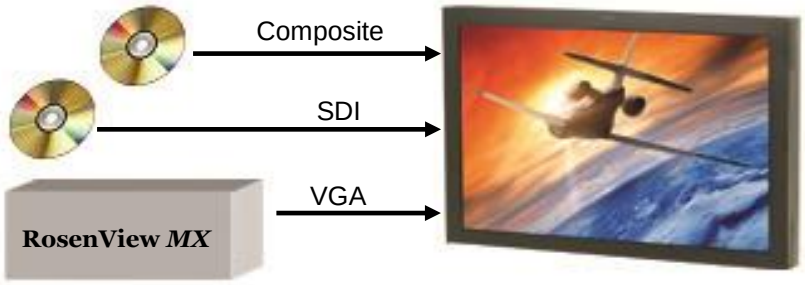


Figure 1 Single display installation

1.1.1. Control Options

Although the 10.6” display does not have a built-in IR sensor, it provides 3.3V DC @100mA output to power an external IR receiver. The IR Receiver (P/N **0500-006**) and RC5 Remote Control (P/N **0500-019**) (sold separately) enables control options inputs to adjust the on-screen display settings.

Alternatively, you can control the 10.6” display via a cabin management system using RS-485 and/or RS-232. For a copy of the *RS-232 External Controller Message Formats* (P/N **9002934**) or *RS485 Network Message Definitions* document (P/N **9002933**), please contact Rosen Aviation Technical Support at 541.342.3802.

Note: For directions on operating the optional universal remote control, refer to the user’s guide enclosed with the remote.

1.1.2. Display Connections

The following cable connections are available:

- Optional HD15 Male VGA connector kit (P/N **0300-055**)
- Required Female 15-pin P1 connector kit (P/N **0300-053**)
- Optional 90-degree connector kit (P/N **0300-058**)
- Optional HD BNC Plug to BNC Jack (P/N **106221**), an adapter for a standard BNC connector running CVBS or SDI

The 10.6” display connectors exit straight down. The 90-degree connector kit (P/N **0300-058**) contains the following adapters to route the harnesses away from the display:

Two – HD BNC Plug to BNC Jack
Two – right-angle BNC Plug to Jack
One – right-angle D-sub 15
One – right-angle HD15

2. INSTALLATION GUIDELINES

2.1. Mounting Configurations

The 10.6 display can be flush mounted to the bulkhead, or secured to a separate mounting structure from the top and bottom, sides, or back of the unit. Installation requirements include

- minimum mounting fasteners: four 8-32 screws.
- minimum clearance: ¼” on the sides, top, and bottom; or ⅛” to the back of the unit; or secure the display to an aluminum structure to act as a heat sink.

Consult the *Outline and Installation* drawing to assist with the installation process. Pay close attention to the dimensions and fastener depths required when considering installation requirements.

NOTICE Touching the LCD with excessive force may leave pressure spots that show in video display. Handle with care.

2.2. Cooling and Ventilation

The 10.6 chassis does not have vent holes for conductive cooling, nor does it require any external forced-air cooling.

2.3. Electrical Requirements

- Nominal voltage 28VDC / .66 A
- Max Power Consumption: 20 W

2.4. Video Connections

The 1060-001 display uses the following connectors.

Figure 2 10.6 bulkhead display connections

2.5. Pinout Connections

There are several ways to connect the remote display system to an aircraft’s entertainment system.

Pay close attention to the pinout descriptions on the *Outline and Installation* drawings to assist in completing the wiring connections.

Note: This display is for entertainment purposes only; connect to a non-critical power bus.

3. INITIAL POWER UP

Make sure that power is turned off and perform the following steps.

1. Ensure a low impedance ground connection on the chassis from any one of the 8-32 mounting holes.
2. Connect the power supply and video source to the appropriate connectors.
3. An optional, 90-degree connector kit (P/N **0300-058**) allows you to route the harness towards the back, if desired.
4. Supply power and wait for a video signal on the screen. The default video mode is Auto Detect and the default power mode is Auto On.
5. The display will search for a valid video signal by priority—Composite first and then SDI. To use VGA, change the Operation Mode from Auto Detect to Standard in the on-screen display (OSD).

NOTICE

Do not plug or unplug the display connector while power is applied.

When cycling power, leave unit off for 20 seconds before restoring power.

4. IR REMOTE CONTROL

The 10.6” displays may use an optional remote control to adjust the on-screen display (OSD) settings. The instructions in this manual use the RC5 IR remote in describing how to navigate the OSD. Table 1 shows the RC5 IR remote layout and the button descriptions.

Table 1 RC5 IR remote control

	How it Works
 Note: The AUTO button works only when an RGB source is active. The MUTE and VOLUME ± buttons are not used.	**SOURCE** Switches between any enabled video inputs. Press the **SOURCE** button twice to switch inputs. The first command sent will only display the current source name in the upper-left corner of the monitor; the second command switches the source.
	POWER Turns the display’s power on and off.
	MENU Opens the Main Menu to access other settings and fine-tune the display’s picture quality. For details, see Section 5, OSD Menu Options, on page 9.
	EXIT Closes the OSD and saves settings. Exit does not close control bars.
	ENTER Accepts changes to menu settings. Selects menu options, accepts settings, and closes the control bars.
	◄►▲▼ Controls the navigation in the on-screen display menus. Navigate between the OSD menu pages, options, and change settings.
	ASPECT Changes the aspect ratio or proportions of the picture depending on the video format. Switches between Full Screen, Pillar Box, and Letterbox Expanded. See also Section 5.2.2, Aspect Ratio, on page 10.
	INFO Opens the Info page on the OSD. Use INFO to verify source and resolution values. Also quick access to open the Technician Menu. See also Section 5.4, Info, on page 16.
	AUTO (**RGB only**) Performs an auto-adjust function without a menu. Forces the display to evaluate the RGB signals and ensure it is interpreting them correctly. See also Section 5.2.5, Auto Adjust, on page 12.
	BRIGHT ± Opens the backlight control bar. See also Section 5.2.1, Backlight, on page 10.

5. OSD MENU OPTIONS

The OSD contains screen settings and options in menus and informational readouts that display over the image, as shown below. Press **MENU** on the remote to open the Main Menu, as shown in Section 5.1.

Press the ▲▼ buttons to navigate within the menu pages. Press the ►◄ buttons to navigate between the menu page, options, and values columns. The yellow highlighted area shows the currently selected option in the menu.

Figure 3 OSD menu pages

The available menu options will vary depending on which source signal is active.

- Press **MENU** to choose a setting or an option.
- Select the **Back** option to switch menu pages.
- Press **EXIT** to close the OSD and save settings.

Note: The on-screen display will timeout and close automatically after no screen activity for a preset amount of time, which is adjustable on the Technician Menu→OSD Timeout option. See Section 6.3, OSD Timeout on page 21.

5.1. Exit

Use Exit to close the OSD. When you press **MENU**, the OSD opens to this screen, as shown below. Press **MENU** again to close the OSD from this screen.

Press the ▲▼ buttons to access the other menu pages in the OSD.

From other settings within the OSD, press **EXIT** on the remote control to close the OSD.

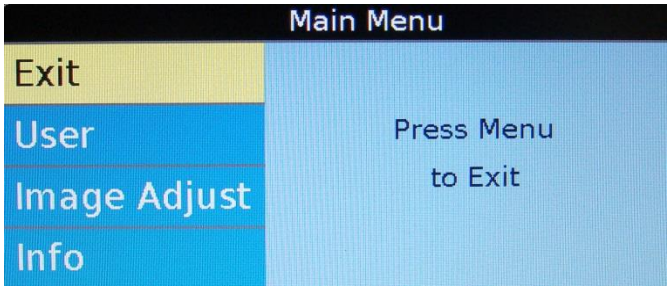
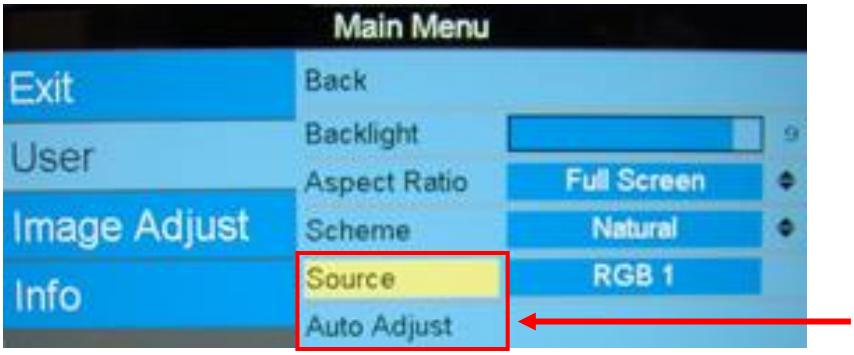


Figure 4 Opening screen for the Main Menu

5.2. User Menu

The Main Menu opens to the screen, shown in Figure 4 (above). Highlight **User** and press the ► button to access the User menu options.

Press ▼▲ buttons to select a User option, and then press **ENTER** to change its value.



Source and Auto Adjust are only available in Standard Operation Mode, and Auto Adjust is active only with a VGA (RGB) source.

Figure 5 User menu options

5.2.1. Backlight

Use this setting to adjust the intensity of the LCD backlight.

From the **User** page, press the ► and ▼buttons to select **Backlight**, and then press **ENTER** to open the control bar shown below.

Press the ◄ or the ► buttons to change the value on the control bar accordingly.

Press **ENTER** to set the backlight brightness and close the control bar.

Figure 6 Backlight option

5.2.2. Aspect Ratio

Use Aspect Ratio to adjust the picture expansion to match the encoding of the source image most closely.

To change the Aspect Ratio from the remote, press **ASPECT**, or select **User→Aspect Ratio** and then press **ENTER**. To switch the display between aspect ratio modes (described below), press the ▲ ▼ buttons. Watch for proportional changes in the background picture and choose the optimal mode for the source. Press **ENTER** to set the mode and press **EXIT** to close the **OSD**.

Full Screen: Displays standard 4:3 source video in 16:9 aspect ratio by expanding the image horizontally. Circles will appear as ovals in the central and outer portions of the screen. If the source image is letterboxed, there will be black bars at the top and bottom of the image. A 16:9 widescreen source will fill the screen with minimal distortion.

Pillar Box: A standard 4:3 source image will appear with vertical black bars on the left and right side of the image. If the image source is letterboxed, then there will also be horizontal bars at the top and bottom of the image as well.

Letter Box Expanded: Expands the source video in the vertical and horizontal dimensions to fill the display screen. Letterbox-format DVDs will have small or no bars showing in this mode, while 4:3 aspect video sources will expand beyond the screen boundaries and appear cropped.

Note: This mode is not available for RGB or a graphic, PC-based HDMI/DVI source.

5.2.3. Scheme

There are two default color settings or schemes: Natural and Vivid. If the screen colors are not what you expect, select Scheme and press the ▲▼ buttons to toggle between the settings. The background picture’s colors change as you toggle between the settings. Vivid uses a higher color saturation level above the Natural level.

Try both schemes to determine which one you like best before adjusting the other picture quality settings.

Select **User→Scheme** and then press **ENTER** to access the settings.

Select the setting and press **ENTER** to accept the changes, and then select **Back** and press **EXIT** to close the OSD.

5.2.4. Source

(Available only when Operation Mode is set to Standard) The Source page lists all of the available sources and shows which source is currently selected.

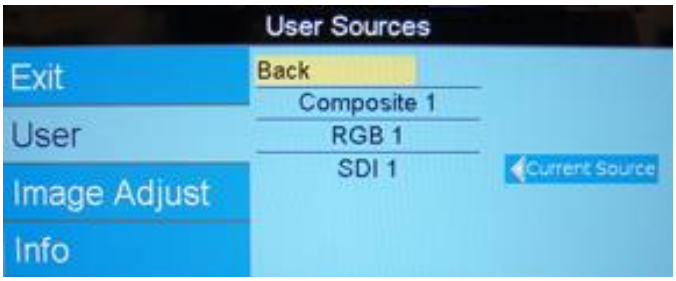


Figure 7 User Sources

Select **User→Source** and press **ENTER** to access the settings.

To switch the source, press the ▲ and ▼ buttons.

Press **ENTER** to accept any changes, and press ◄ to remain in the OSD or **EXIT** to close the OSD.

To switch sources directly from the remote control, close the OSD and press the **SOURCE** button twice for each input.

5.2.5. Auto Adjust

(Available only when Operation Mode is set to Standard and the RGB source is active.) Use Auto Adjust to force the display to evaluate the RGB signals and ensure that it is interpreting them correctly. To perform an Auto Adjust within the OSD, select the option and press **ENTER**. (From the remote, close the OSD and press the **AUTO** button.) The screen will go black briefly while the signals adjust.

5.3. Image Adjust Menu

Use the Image Adjust menu options, as shown below, to control the color and picture quality. Highlight **Image Adjust** and press the ► button to access the Image Adjust menu options.

Press ▼▲ buttons to select an Image Adjust option, and then press **ENTER** to change its value.

Figure 8 Image Adjust menu options

5.3.1. Scheme

Scheme is also available from the Main Menu→User page. For information about how this option works, see Section 5.2.3, Scheme, on page 11. Changing the Scheme also affects changes that you make to the User menu settings and is source specific.

5.3.2. Picture-quality Controls

The Brightness, Contrast, Saturation, Hue, and Sharpness menu options use control bars to fine-tune different aspects of the picture quality. To adjust these options, press **MENU** and the ▼ to select **Image Adjust.** Choose a menu option, and then press **MENU** to open a control bar and adjust the value, similar to Figure 9, shown below.

Press the ◄ or the ► buttons to increase or decrease the control’s value.

Press **ENTER** to set the menu option and close the control bar.

Press **EXIT** to close the OSD.

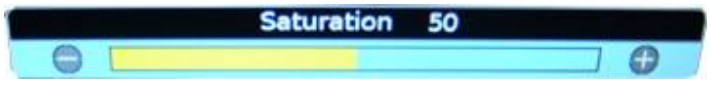


Figure 9 Sample picture-quality control bar

5.3.3. Reset Scheme

Restores the values of the current scheme to their default settings, and it affects only the current source. Use Reset Scheme to revert to the default screen colors if the other Image Adjust options did not correct the screen quality.

Select **Image Adjust→Reset Scheme** and then press **ENTER**.

Press **EXIT** to close the OSD.

For information about the different Scheme modes, see Section 5.2.3 on page 11.

5.3.4. Image Adjust Advanced (Submenu)

Use the Image Adjust Advanced submenu options, as shown below, to fine-tune the primary screen colors and to restore the monitor’s factory screen settings. Press the **MENU** button and the ▼ button to select **Image Adjust→Advanced**, and then press **ENTER** to open the menu.

To close the menu, select the **Back** option, or press **EXIT** to close the OSD.

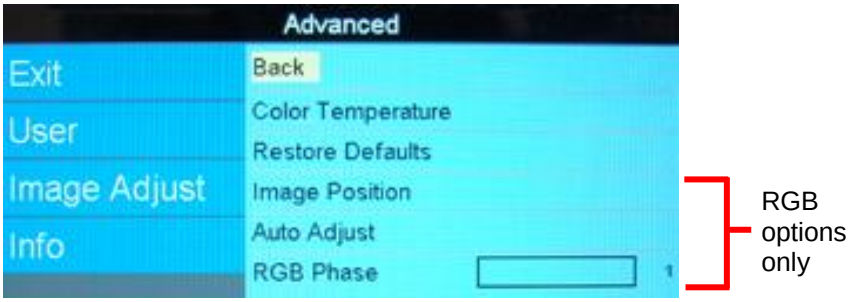


Figure 10 Advanced submenu options

5.3.4.1. Color Temperature

Use the Color Temperature options to change the warmth of the picture in all sources. When you select Color Temperature, the screen changes, and a toggle appears to switch between User and 6500K, as shown below.

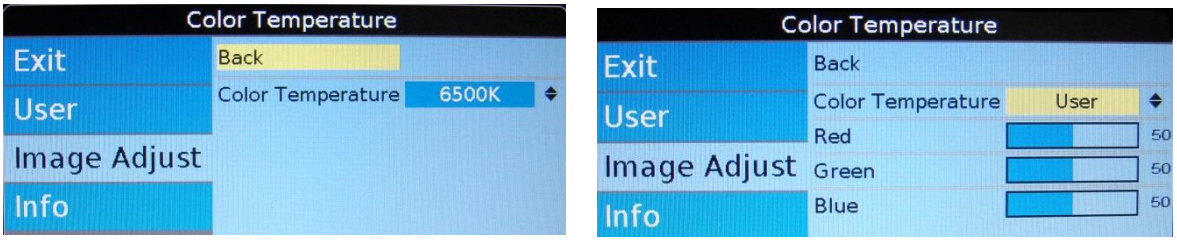


Figure 11 Color Temperature options

Select the **User** setting and then press **ENTER**.

Press ▼ to access the individual colors.

5.3.4.1.1. Color Levels: Red, Green, Blue

Setting the Color Temperature to User will make the Red, Blue, and Green options active. Each color adjusts the low-level registers of its respective color value in the picture.

Select the **Image Adjust→Advanced→Color Temperature** and press **ENTER.** Set Color Temperature to **User**, and then press **ENTER**.

Press ▼ to choose a color level, and then press **ENTER** to open a control bar to adjust the value, similar to Figure 12 shown below.

- **Red**: Press ◄ to show more cyan-colored tones, and press ► to intensify the red tones.
- **Green**: Press ◄ to show more magenta tones, and press ► to intensify the green tones.
- **Blue**: Press ◄ to show more yellow tones, and press ► to intensify the blue tones.

Press **ENTER** to set the color and close the control bar.

Press **EXIT** to close the OSD.

Figure 12 Sample color-level control bar

5.3.4.2. Restore Defaults

This option restores the default screen settings from the user menus for all video sources. It does not erase Technician Menu settings or change the internal time and date. A Defaults Restored message appears in the lower corner of the menu after the restore is complete.

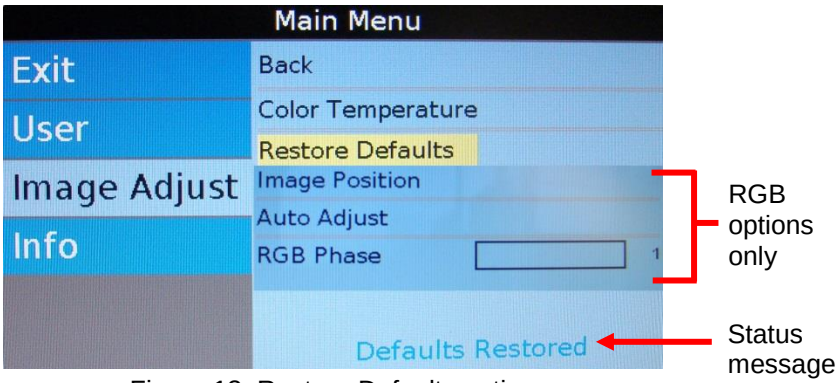


Figure 13 Restore Defaults option

5.3.4.3. Image Position Submenu

(RGB only) Use the Image Position options to center an RGB picture horizontally or vertically on the screen. **Note:** Changing the resolution, source, or cycling power will reset any adjustments to this submenu’s settings.

Select the **Image Adjust→Advanced→Image Position** options and then press **ENTER**.

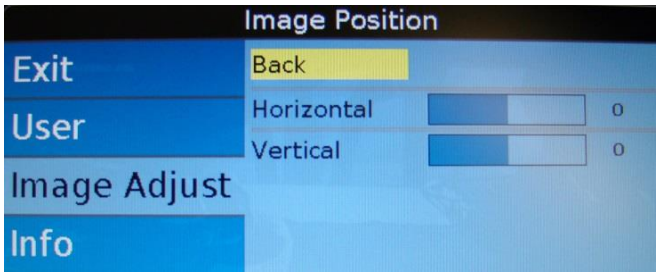


Figure 14 Image Position option

5.3.4.3.1. Horizontal and Vertical Controls

(RGB only) From the **Image Adjust→Advanced→Image Position** submenu, press the ▼ button to choose either **Horizontal** or **Vertical**, and then press **ENTER** to open a control bar, similar to Figure 15 shown below.

Press the ◄ button to shift the picture left/up or the ► button to shift it to the right/down.

Press **ENTER** to set the phase value and close the control bar.

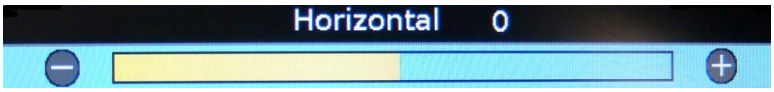


Figure 15 Sample image positioning control bar

5.3.4.4. Auto Adjust

(RGB only) Use Auto Adjust when the RGB source is active to force the display to evaluate the RGB signals and ensure that it is interpreting them correctly. To perform an Auto Adjust within the OSD, select the option and press **ENTER**. (From the remote, close the OSD and press the **AUTO** button.) The screen will go black briefly while the signals adjust.

5.3.4.5. RGB Phase

(RGB only) Use RGB Phase to adjust the default phase value used for RGB signals. Each RGB video source can have different phase values, which can result in the RGB video image appearing to jitter. RGB Phase enables you to adjust the RGB video image to eliminate jitter.

From the **Image Adjust→Advanced** submenu, press the ▼ button to choose **RGB Phase** and then press **ENTER** to open the control bar, as shown below.

Press the ► button to increase the RGB phase value until the jittering stops.

Press **ENTER** to set the phase value and close the control bar.

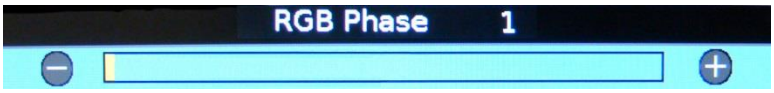


Figure 16 RGB Phase control bar

5.4. Info

Use the Information page to review operating status, view details about the display, and access the Technician Menu.

To open the Info page, press the **INFO** button on the remote, or use the ▲▼ buttons from the Main Menu and navigate to **Info**.

Notes:

- Press ENTER or the ► button to highlight the Back option—required to access the Technician Menu.
- The firmware (FM) fields vary by model and are subject to change.

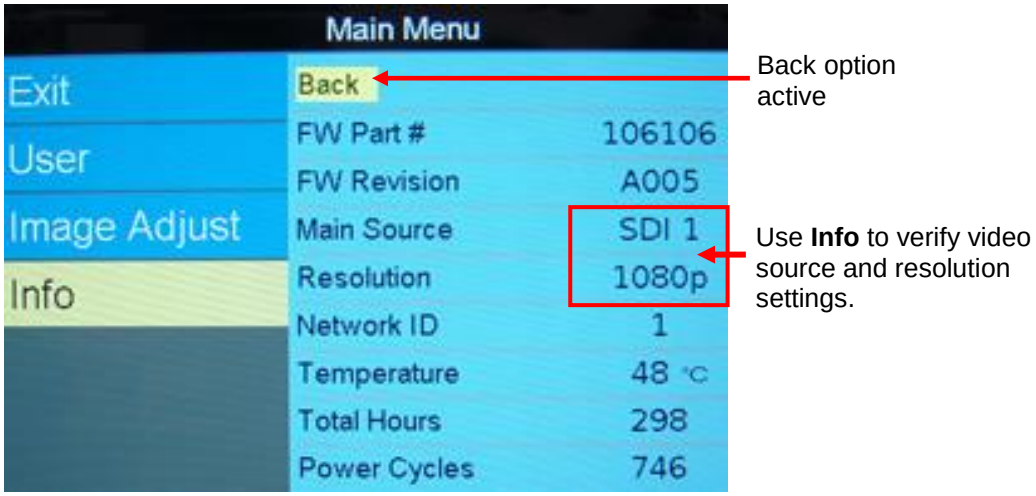


Figure 17 Info page

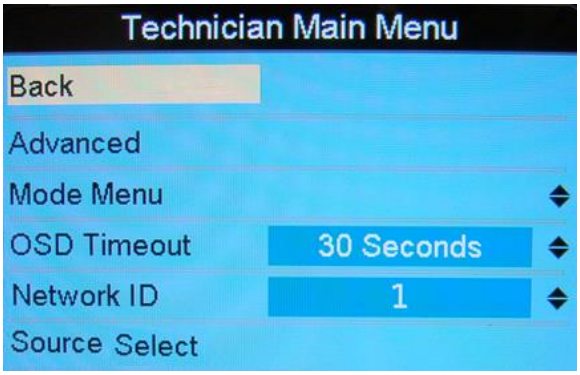
6. TECHNICIAN MENU

To protect the display from accidental or unintentional adjustments, the Technician Menu is accessible only with a special button combination. To avoid repeating this button sequence after each change, the menu remains active until you manually close it.

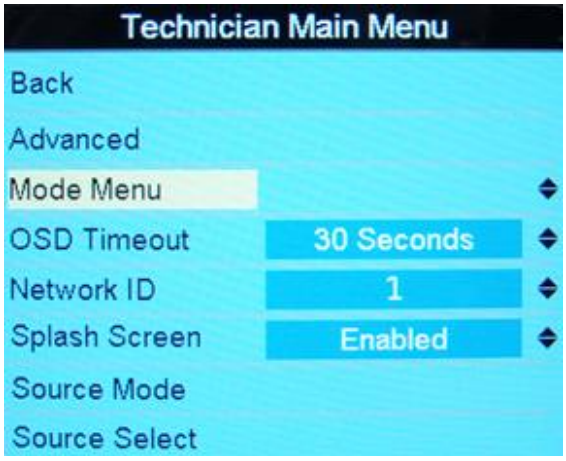
NOTICE Whenever there is a change to the OSD, exit the menu, and cycle power for the changes to be fully accepted.

To open the Technician Menu, start with the display on, and press the following buttons in this order:

1. Press **INFO** to open the Info page in the Main Menu.
2. With the **Back** option highlighted on the Info page, press the ▲▼▲▼▲▲▲ buttons and then press **MENU**.
3. The Technician Menu opens. The options you see depend on the Mode Menu settings. Splash Screen and the Source Mode menu will appear only when the Mode Menu→Operation Mode is set to Standard.



Auto Detect mode (default)



Standard mode

Figure 18 Technician Main Menus

To navigate the menu options, press the ▲ or ▼ buttons.

To close the Technician Menu and return to the Info Page, select the **Back** option and press **MENU**. To close the Technician Menu and the OSD, press **EXIT**.

Note: The Main Menu options are not selectable while the Technician Menu is open.

6.1. Advanced Technician Submenu

This submenu provides installers and technicians more advanced controls of the image. The active video signal and the Mode Menu→Operation Mode setting determine which options will appear in the Technician Advanced submenu.

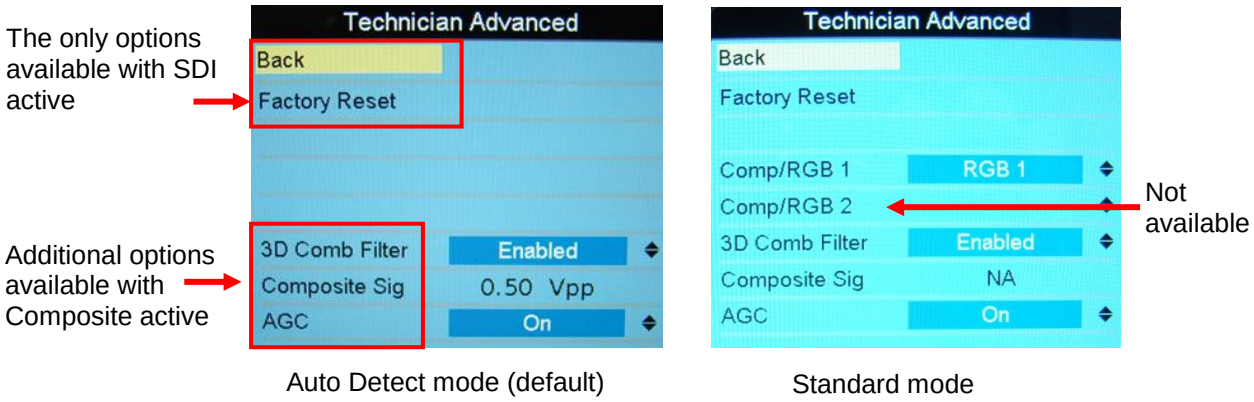


Figure 19 Technician Advanced submenus

6.1.1. Factory Reset

Choose this option to perform a complete factory restore. It is similar to Reset Scheme in the Main Menu→Advanced submenu; however, Factory Reset returns all options with pre-determined defaults in *both* the User and Technician menus to their factory default settings.

Highlight **Advanced→Factory Reset** and press **ENTER**.

A *Reset Complete* message appears after the display restores the default settings. A Factory Reset will not change the Operation Mode (Auto Detect/Standard).

6.1.2. Comp/RGB 1

Use Comp/RGB 1 to specify which signal type the Component/RGB channel 1 will accept. The options for channel 1 to display are either Component or RGB 1. (Comp/RGB1 is available when you set the Operation Mode to Standard.)

Highlight **Advanced→Comp/RGB 1** and press **ENTER**.

Use the ▲▼ buttons to set the option, and then press **ENTER**.

Select **Back** to return to the Technician Menu.

Press **EXIT** when you are ready to exit the OSD.

6.1.3. 3D Comb Filter

(Composite only) When set to Enabled, the display will eliminate dot crawl and some noise on stationary portions of the picture.

Highlight **Advanced→3D Comb Filter** and press **ENTER**.

Use the ▲▼ buttons to set the option **Enabled** or **Disabled**, and then press **ENTER**.

Select **Back** to return to the Technician Menu.

Press **EXIT** when you are ready to exit the OSD.

6.1.4. Composite Sig (Signal)

(Composite only) This is a read-only screen that shows the signal strength of the currently viewed Composite source. Composite Signal strength ranges from 0 to 1.25 Vpp in 0.25V increments. It will read NA (not available) if a Composite source is not active or the AGC (Automatic Gain Control) (below) is set to Off.

6.1.5. AGC (Automatic Gain Control)

(Composite only) This option is a signal compensation tool that will accommodate for strong and weak Composite signals.

Highlight **Advanced→AGC** and press **ENTER**.

Use the ▲▼ buttons to set the option **On** or **Off**, and then press **ENTER**.

Select **Back** to return to the Technician Menu.

Press **EXIT** when you are ready to exit the OSD.

6.2. Mode Menu

Use the Mode Menu options to specify the power and operation modes, and to access the SDI Overscan settings.

From the Technician Main Menu, select **Mode Menu** and then press **ENTER** to open the submenu, as shown below.

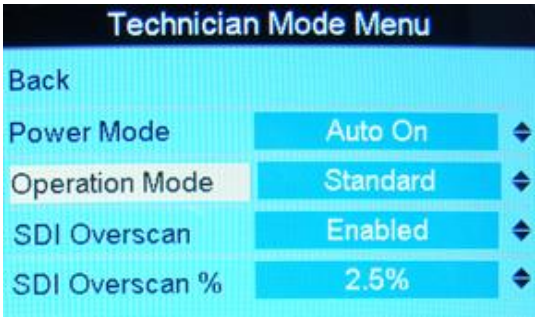


Figure 20 Technician Mode Menu

6.2.1. Power Mode

Use Power Mode to set display’s power mode to a startup state.

From the Technician Menu, press the ▼ button to select **Mode Menu→Power Mode** and then press **ENTER**.

Use the ▲▼ buttons to set the option and then press **ENTER**.

Options include the following:

- **Auto On:** The display always starts up in the ON state when 28V is applied (default).
- **Auto Off:** The display always starts up in the standby state when 28V is applied.
- **Restore Previous:** The display returns to the previous power settings after any power interruption.
- **Ground On:** The display always starts up in the ON state when the power pin is set to ground, and ignores all power commands from the IR, RS-232, and RS-485. This setting will not take effect until you close the OSD.
- **Open On:** The display always starts up in the ON state when the power pin is open (not grounded), and ignores all power commands from the IR, RS-232, and RS-485. This setting will not take effect until you close the OSD.
- **Momentary:** The LCD power will toggle between on and off after the external power discrete is momentarily grounded.

Select **Back** to return to the Technician Menu.

Press **EXIT** when you are ready to exit the OSD.

6.2.2. Operation Mode

Use Operation Mode to specify whether the display will operate in Standard (all options/functions) or in Auto Detect mode. Changing modes will perform a factory reset and the screen will briefly go black.

From the Technician Menu, press the ▼ button to select **Mode Menu→Operation Mode** and then press **ENTER**.

Use the ▲▼ buttons to set the option and then press **ENTER**.

Options include the following:

- **Standard:** The display is able to cycle between all available sources.
- **Auto Detect:** (Default) The display detects the configured signals with the following priority: Composite first and then SDI. If both signals are valid, but the Composite signal drops out, the source will automatically switch to SDI. Whichever signal is valid, the software switches to that input. In this mode, the user cannot switch between sources.

6.2.3. SDI Overscan

Use SDI Overscan to enable or disable video overscan for SDI at 480i and 576i resolutions. When enabled, the setting cuts off a small percentage (2.5% by default) around the edges of the picture and it resizes the image to fit the full screen. When set to disabled, a zero percent overscan is applied to all SDI resolutions. You can also enable/disable this feature via the RS-232 and RS-485 protocols.

From the Technician Menu, press the ▼ button to select **Mode Menu→SDI Overscan** and then press **ENTER**.

Use the ▲▼ buttons to set the option to **Enabled** or **Disabled**, and then press **ENTER**.

Select **Back** and press **ENTER** to return to the Technician Menu.

Press **EXIT** when you are ready to exit the OSD.

6.2.4. SDI Overscan %

Use SDI Overscan % to set the amount of overscan applied to picture edges of SDI signals at 480i and 576i resolutions. The setting percentages are 0.0%, 2.5% (default), 3.0%, 5.0%, and 10.0%. The overscanned image will automatically update when you switch between percentage values. You do not have to cycle power for the change to take effect. You can also change the overscan value via the RS-232 and RS-485 protocols.

From the Technician Menu, press the ▼ button to select **Mode Menu→SDI Overscan %** and then press **ENTER**.

Use the ▲▼ buttons to set the percentage option and then press **ENTER**.

Select **Back** and press **ENTER** to return to the Technician Menu.

Press **EXIT** when you are ready to exit the OSD.

6.3. OSD Timeout

Use OSD Timeout to set the amount of time the menu screens and control bars are visible, without making any changes, before they timeout and close automatically.

There are three increments: 6 Seconds, 15 Seconds, and 30 Seconds.

From the Technician Menu, press the ▼ button to select **OSD Timeout** and then press **ENTER**.

Use the ▲▼ buttons to select a time increment and press **ENTER**.

Press **EXIT** to exit the OSD.

6.4. Network ID

Use this option to specify the IR and RS-485 network addresses to control multiple displays from a single cabin management system or remote. For example, the monitor ID numbers on a universal remote correspond to the Network ID.

Each display requires a unique address on the RS-485 network. Setting this address sets the value for both interfaces.

For information about configuring RS-485 network addresses, contact Rosen Technical Support and request the *RS-485 Network Message Definitions* (P/N **9002933**).

From the Technician Menu, press the ▼ button to select the **Network ID**, and then press **ENTER** to open the screen.

Use the ▲▼ buttons to select an address between 1 and 31 for the display and press **ENTER**.

Select **Back** and press **ENTER** to return to the Technician Menu.

Press **EXIT** when you are ready to exit the OSD.

6.5. Splash Screen

(Available only when Operation Mode is set to Standard) Use this option to turn a custom splash screen on or off. The splash screen appears for approximately eight seconds when 28V power is first applied to the display. When enabled, the Rosen Aviation splash screen appears. When disabled, the screen remains black.

Highlight **Technician→Splash Screen** and press **ENTER**. Use the ▲▼ buttons to set the option and then press **ENTER**.

Select **Back** and press **ENTER** to return to the Technician Menu.

Press **EXIT** when you are ready to exit the OSD.

6.6. Source Mode Submenu

(Available only when Operation Mode is set to Standard) This submenu enables you to set the Source Select mode to a specific state: either Momentary switch mode (default) or Constant switch mode.

From the Technician Menu, select **Source Mode** and press **ENTER**.

Use the ▲▼ buttons to set the option and then press **ENTER**.

Note: To ensure proper operation, perform a power cycle after changing a setting.

6.6.1. Momentary Mode

Momentary enables you to specify those sources that will be set to On or Off. This mode also contains an option to specify an Auto Detect source.

If the source specified in the Auto Detect option is connected, the display will ignore all source commands. If Auto Detect is set to None Selected, the monitor will return to normal momentary operation.

Highlight **Technician→Source Mode** and press **ENTER**. Momentary is the default Source Select option. If Source Select is set to Constant, highlight **Source Select** and press **ENTER.** Use the ▲▼ buttons to switch to **Momentary**, and then press **ENTER**.

Use the ▼ to select **Auto Detect**, and then press **ENTER**.

Select which video input will be auto-detected and then press **ENTER**.

Use the arrow buttons to turn the other video inputs On/Off and then press **ENTER**.

Press **EXIT** when you are ready to exit the OSD.

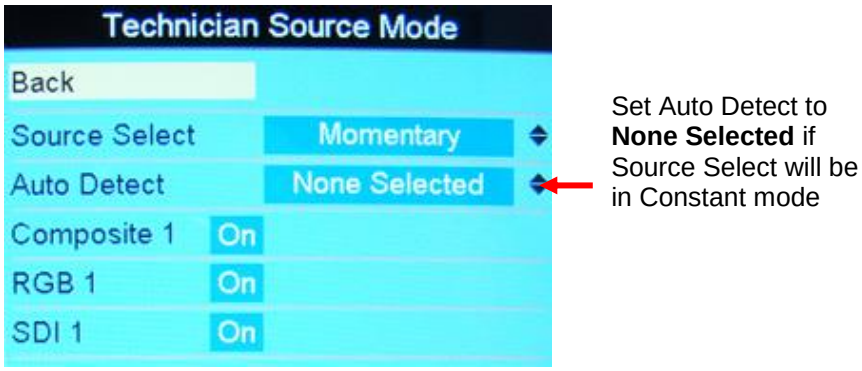


Figure 21 Source Mode Momentary settings

6.6.2. Constant Mode

Constant enables you to specify the two sources the monitor will switch between when the constant switch goes between an open state and a ground state.

Highlight **Technician→Source Mode→Source Select** and then press **ENTER**.

Select **Constant** and press **ENTER**. Press ▼ to select **Open** and then press **ENTER**.

Select which video input will be set to open and then press **ENTER**.

Press ▼ to select **Ground** and then press **ENTER.**

Select which video input will be set to ground and then press **ENTER**.

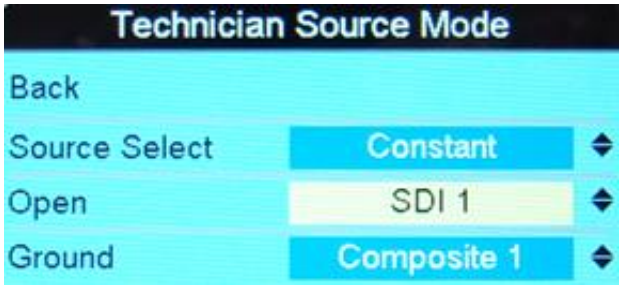


Figure 22 Source Mode Constant options

Select **Back** to return to the Technician Menu.

Press **EXIT** when you are ready to exit the OSD.

7. TECHNICAL REFERENCES AND SUPPORT

NOTICE Check the Rosen Aviation website to ensure that you are working with the most current revision of technical documentation.

Table 2 Technical references

Product	Part Number	Location
RC5 Remote Control	**0500-019**	Contact Rosen Sales
IR Receiver	**0500-006**	Contact Rosen Sales
HD15 Male VGA connector kit	**0300-055**	Contact Rosen Sales
Female 15-pin P1 connector kit	**0300-053**	Contact Rosen Sales
90-degree connector kit	**0300-058**	Contact Rosen Sales
HD BNC Plug to BNC Jack	**106221**	Contact Rosen Sales
RS-485 Network Message Definitions	**9002933**	Contact Rosen Technical Support
RS-232 External Controller Message Formats	**9002934**	Contact Rosen Technical Support
Outline & Installation Drawing	**1060-001-CD**	www.rosenaviation.com

7.1. Troubleshooting

If the display does not function properly, refer to the following troubleshooting table for symptoms and possible solutions before contacting Rosen Technical Support.

Note: Always use a multimeter to verify voltages. Check actual results against the requirements described in this manual.

Table 3 Troubleshooting tips

Problem	Possible Solutions
No video (signal)	• Verify that the display is turned on and the video is on. • Verify that you are in the correct source mode. • Verify that a signal is reaching the display using an oscilloscope or another display. • Check the Power Control Pin. See the Power Mode settings on page 20. • Verify that the pinout is correct.
Screen is black	• Verify that the display is receiving power. • Check the Power Mode settings on page 20. • Verify that the pinout is correct. • Verify that the video source is on and playing. • Verify all connections between the source and the display.
Image flickers	• Verify that the connection kits are correct and securely fastened. • Try turning on the AGC (Automatic Gain Control) setting on page 19. • Verify that the signal cable is secure. • Verify that the vertical frame frequency is 60 Hz or less.
Distorted Image	• Verify proper connections, per the latest O&I drawings. • Verify supported resolution. • Check the Power Mode settings on page 20. • Verify that the pinout is correct. • Verify that a signal is reaching the display using an oscilloscope or another display. • Examine the display for pinched or damaged cables.
Wrong Colors	• Verify proper connections, per the latest technical drawings. • If the screen colors are not what you expect, reset the current scheme. For more information, see Reset Scheme on page 13 and Restore Defaults on page 14.

7.2. Cleaning the Display

To clean the LCD, very gently wipe the screen with a clean, commercially approved LCD cleaning cloth and alcohol-free LCD cleaning solution. Use one firm cleaning motion instead of circular or repeated side-to-side scrubbing.

7.3. RTCA DO-160F Qualifications for Displays

The table below shows the DO-160F compliance of the 1060-001, unless otherwise noted. Omitted categories are not applicable to these products or their expected installations.

Table 4 The 10.6” display is compliant with the following DO-160F test criteria

Description	Section	Category	Comments
Temperature and Altitude	**4**		
Ground Survival/Short-Time Operating Low Temp	4.5.1	A1	
Operating Low Temperature	4.5.2	A1	
Ground Survival/Short-Time Operating High Temp	4.5.3	A1	
Operating High Temperature	4.5.4	A1	
In-flight Loss of Cooling	4.5.5	–	Not applicable
Altitude	4.6.1	A1	
Decompression	4.6.2	A1	
Overpressure	4.6.3	A1	
Temperature Variation	**5**		
Temperature Variation	5.3.1	C	
Humidity	**6**		
Humidity	6.3.1	A	
Operational Shocks & Crash Safety	**7**		
Operational Shocks	7.2.1	B	
Crash Safety (Impulse)	7.3.2	B	
Crash Safety (Sustained)	7.3.3	B	
Vibration	**8**		
Random Vibration – Fixed Wing Aircraft	8.5.2	S (Curve B)	
Magnetic Effect	**15**		
Magnetic Effect	15.3	A	
Power Input	**16**		
Normal Operating Conditions (DC)	**16.6.1**		
Average Value Voltage (DC)	16.6.1.1	Z	
Ripple Voltage (DC)	16.6.1.2	Z	
Momentary Power Interruptions (DC)	16.6.1.3	Z (A)	Seamless operation through 200 msec, EUT must self-recover for interruptions longer than 200 msec.
Normal Surge Voltage (DC)	16.6.1.4	Z	
Engine Starting Under Voltage Operation (DC)	16.6.1.5	Z	

Description	Section	Category	Comments
Abnormal Operating Conditions	**16.6.2**		
Voltage Steady State (DC)	16.6.2.1	Z	
Momentary Under Voltage (DC)	16.6.2.3	Z	
Abnormal Surge Voltage (DC)	16.6.2.4	Z	
Voltage Spike	**17**		
Voltage Spike	17.4	A	
Audio Frequency Conducted Susceptibility	**18**		
AF Conducted Susceptibility- Power Inputs	18.3.1	Z	
Induced Signal Susceptibility	**19**		
Magnetic Fields Induced Into Equipment	19.3.1	AC	
Magnetic Fields Induced Into Interconnecting Cables	19.3.2	AC	
Electric Fields Induced Into Interconnecting Cables	19.3.3	AC	
Spikes Induced Into Interconnecting Cables	19.3.4	AC	
Radio Frequency Susceptibility	**20**		
Conducted Susceptibility (CS) – 10kHz to 400MHz	20.4	T	
Radiated Susceptibility (RS) – 100MHz to 18GHz	20.5	T	
Emission of Radio Frequency Energy	**21**		
Conducted RF Emission	21.4	M	
Radiated RF Emission	21.5	M	
Electrostatic Discharge (ESD)	**25**		
Electrostatic Discharge (ESD)	25.5	A	
Flammability	**26**	N/A	Flammability testing in accordance with 14 CFR 25.853 Appendix F

7.4. Supported Video Resolutions

7.4.1. VGA Resolutions

640x480p/60 VGA

800x600p/60 SVGA

1024x768p/60, 1152x864p/60 XGA

1280x768p/60 (68.250 MHz), 1280x768p/60 (79.500 MHz), 1360x768p/60 WXGA

1440x900p/60 WSXGA

1280x1024p/60 SXGA

1400x1050p/60 (101.000 MHz), 1400x1050p/60 (121.750 MHz) SXGA+

1680x1050p/60 WSXGA+

1600x1200p/60 UXGA

1920x1200p/60 (154 MHz) WUXGA

7.4.2. CVBS/Composite Resolutions

NTSC (480i/29)

PAL (576i/25)

SECAM (576i/25)

RS-170 B&W (480i/29)

The software continually checks and chooses the appropriate color decoder (NTSC, PAL, or SECAM) based on the analog input signal.

7.4.3. SDI Resolutions

SMPTE 259M

480i/29

576i/25

SMPTE 292M

720p/50, 720p/59, 720p/60

1080i/25, 1080i/29, 1080i/30

1080p/23, 1080p/24, 1080p/25, 1080p/29, 1080p/30

SMPTE 424M

1080p/50, 1080p/59, 1080p/60

8. DEFINITIONS

3G HD-SDI Newer, high-definition serial digital interface with a single 2.970 G/bit/s serial link

A Amps

AF Audio frequency

CFR Code of Federal Regulations

CS Conducted susceptibility

CVBS Composite Video Blanking and Sync

DVI Digital Visual Interface

EUT Equipment under test

HD High Definition

HDMI High Definition Multimedia Interface

HD-SDI High Definition Serial Digital Interface

IR Infrared

LCD Liquid Crystal Display

NTSC National Television Standards Committee; an analog video standard used in the United States, Canada, Japan, Mexico, the Philippines, South Korea, Taiwan, and some other countries

OSD On Screen Display – the actual user/technician menu, and any informational readouts displayed on the image.

P/N Part Number

PAL Phase alternate (by) line – the analog video specification used by most European countries and their former colonies worldwide

PC Personal computer

RF Radio frequency

RGB Red, Green, Blue

RS-232 Standard for serial binary data interchange

RS-485 Standard for allowing multiple devices to share a common set of serial data communication lines

SDI Serial Digital Interface

SECAM (*Séquentiel couleur à mémoire;* French for "sequential color with memory"), an analog color video system first used in France

SMPTE Society of Motion Picture and Television Engineers – timecode frame rates

SVGA Super Video Graphics Array

SXGA Super Extended Graphics Array

UXGA Ultra eXtended Graphics Array

V Volts

VDC Volts direct current

VGA Video Graphics Array

Vpp Volts peak-to-peak

W Watts

WSXGA Widescreen eXtended Graphics Array

WUXGA Widescreen Ultra eXtended Graphics Array

WXGA Wide eXtended Graphics Array

XGA Extended Graphics Array

9. REVISION HISTORY

NOTICE Revision E is limited to draft or prototype documents. Revisions I, O, Q, S, X and Z are not to be used.

Revision	Date	Revision Description	EC
A	03/29/13	Initial release	13-0125
B	04/25/13	Update 15-pin D-sub connector and connector kit from male to female for P1	13-0175
C	08/06/13	Remove Source Select from Technician Menu and miscellaneous descriptive changes for bulkhead displays	13-0299
D	03/20/14	Update cover photo, figure 1, and Section 7.2 cleaning the display	14-0099

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